Washington State Institute for Public Policy

Benefit-Cost Results

Infant Health and Development Program (IHDP)

Public Health & Prevention: Home- or Family-based

Benefit-cost estimates updated December 2019. Literature review updated August 2017.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our Technical Documentation.

Program Description: The Infant Health and Development Program (IHDP) is an early intervention program for preterm (< 37 weeks gestation), low birthweight (< 2,500 grams) infants that aims to improve children's cognitive and behavioral outcomes. This three-year intervention includes home visits, weekday attendance at an educational child day care program, and bimonthly parent group meetings. In the included study, all participants in the treatment and comparison groups received pediatric follow-up services (treatment as usual).

Benefit-Cost Summary Statistics Per Participant

Benefits to:

Taxpayers	$4,224
Participants	$10,218
Others	$8,206
Indirect	($20,772)
Total benefits	$1,875
Net program cost	($41,655)
Benefits minus cost	($39,780)

Benefit to cost ratio	$0.05
Benefits minus costs	($39,780)
Chance the program will produce benefits greater than the costs	19 %

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2018). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our Technical Documentation.

Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to:[1]	Benefits to:				
	Participants	Taxpayers	Others[2]	Indirect[3]	Total
Labor market earnings	($5,891)	($2,508)	$0	$0	($8,399)
Public assistance	$555	($1,521)	$0	($761)	($1,727)
Subtotals	($5,336)	($4,029)	$0	($761)	($10,126)
From secondary participant					
Crime	$0	$0	$0	$0	$0
Labor market earnings associated with test scores	$15,554	$6,622	$8,205	$0	$30,381
K-12 grade repetition	$0	$46	$0	$23	$69
K-12 special education	$0	$1,585	$0	$792	$2,377
Health care associated with disruptive behavior disorder	$0	$1	$1	$0	$2
Subtotals	$15,554	$8,253	$8,206	$816	$32,829
Adjustment for deadweight cost of program	$0	$0	$0	($20,827)	($20,827)
Totals	$10,218	$4,224	$8,206	($20,772)	$1,875

[1]In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

[2]"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

[3]"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

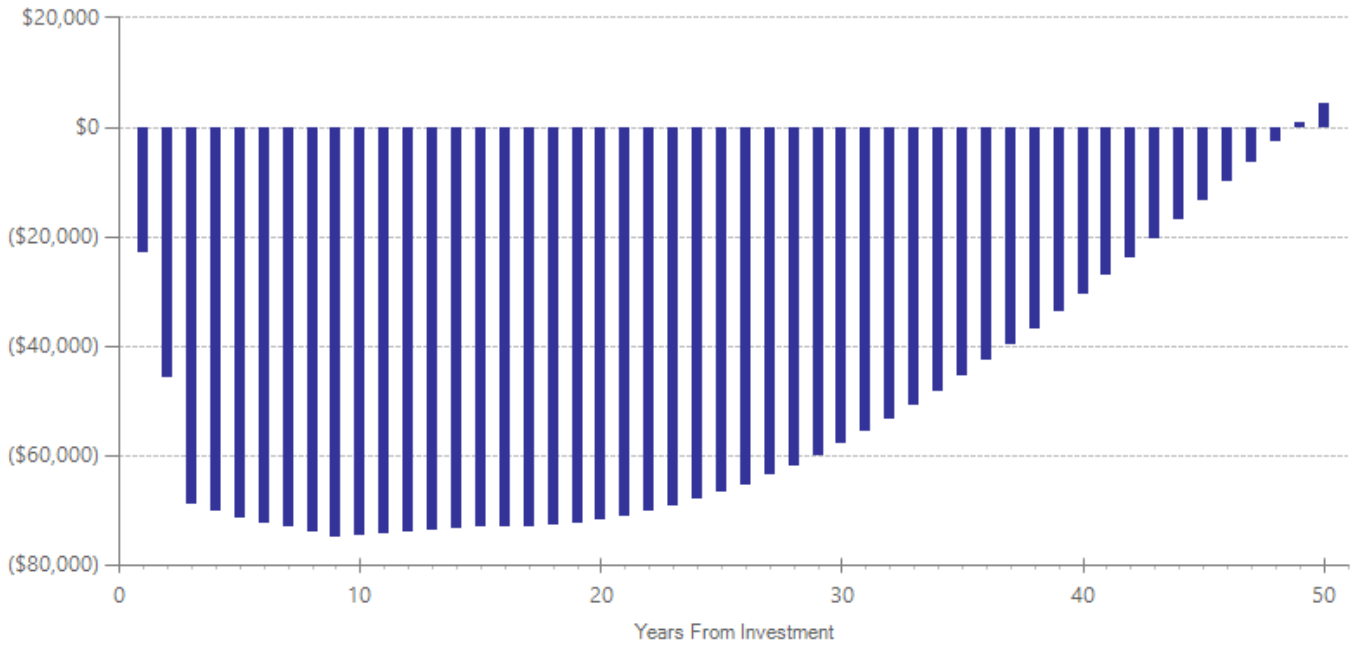
Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	$13,636	2016	Present value of net program costs (in 2018 dollars)	($41,655)
Comparison costs	$0	2016	Cost range (+ or -)	25 %

The per-participant cost represents the average annual cost over the three-year program. The annual cost estimate relies on a per-child cost for the third year of implementation at the Miami site (Gross et al., 1997). This estimate includes costs for personnel, operations (e.g., equipment and materials), day care meals, and transportation. WSIPP applied the year 3 estimate to year 2 of IHDP, given programmatic similarity. Year 1 of the IHDP was substantially different from years 2 and 3; while it did not contain the day care component, home visiting occurred twice as frequently. WSIPP thus constructed an estimate for year-1 costs based on relevant year-3 operational and personnel costs, corrected for the increased frequency of home visiting. The total estimate was multiplied by 0.75, based on the reported 75% fidelity to the home visiting component.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our Technical Documentation.

Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the "break-even" point from a budgeting perspective. If the dollars are negative (bars below $0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach $0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above $0, the benefits of the program exceed the initial investment.

Meta-Analysis of Program Effects

Outcomes measured	Treatment age	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
					First time ES is estimated			Second time ES is estimated				
					ES	SE	Age	ES	SE	Age	ES	p-value
Employment	25	Primary	2	334	-0.100	0.287	33	0.000	0.000	34	-0.100	0.728
Public assistance	25	Primary	1	307	0.116	0.135	28	0.116	0.135	28	0.116	0.390
Disruptive behavior disorder symptoms	1	Secondary	2	334	-0.001	0.107	8	0.000	0.064	11	-0.001	0.996
K-12 grade repetition	1	Secondary	1	338	-0.044	0.229	8	-0.044	0.229	8	-0.044	0.849
K-12 special education	1	Secondary	1	338	-0.112	0.209	8	-0.112	0.209	8	-0.112	0.592
Preschool test scores^	1	Secondary	2	347	0.506	0.184	3	n/a	n/a	n/a	0.506	0.006
Test scores	1	Secondary	2	239	0.200	0.084	17	0.200	0.084	17	0.200	0.017

^WSIPP's benefit-cost model does not monetize this outcome.

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our Technical Documentation.

Citations Used in the Meta-Analysis

Brooks-Gunn, J., McCormick, M.C., Shapiro, S., Benasich, A.A., & Black, G.W. (1994). The effects of early education intervention on maternal employment, public assistance, and health insurance: The Infant Health and Development Program. *American Journal of Public Health, 84*(6), 924-931.

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